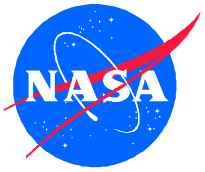


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4.4
Control
Center

Control Center Operations Control Center (OCC)

- Requirements Traceability
 - “A fixed computer-based data handling and processing system shall be provided to support flight, flight contingency terminate, and terminate operations.”
 - Design-To Requirements Document Section 4.4
- Trade Studies
 - ~~Modified LDB~~
 - ~~In-house development~~
 - COTS
 - GOTS

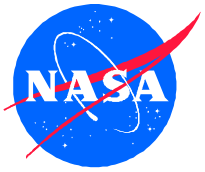


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**4.4
Control
Center**

Control Center Operations Control Center (OCC)

- Functional and Performance Requirements
 - Fixed data handling and processing system
 - Support float and terminate operations
 - Telemetry Acquisition
 - Command
 - Data Management
 - Real-Time Monitor and Control
 - Data Analysis
- Verification Matrix
 - Demonstration, inspection, analysis

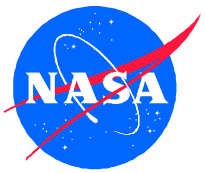


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**4.4
Control
Center**

Control Center Operations Control Center (OCC)

- Description
 - 3 ITOS Workstations: Operations, Engineering, Backup
 - Some enhancements to ITOS to be added
 - LabVIEW to be integrated for enhanced engineering displays
 - SatTrack to be integrated for enhanced operations displays
 - Analysis Workstation
 - Web Server (Analysis Workstation backup)
- Risk Assessment & Mitigation/Reliability
 - ITOS currently supports an array of satellite operations
 - GOTS product minimizes cost

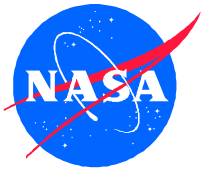


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**4.4
Control
Center**

Control Center Integrated Test & Operations System (ITOS)

- I&T system for SAMPEX and FAST Small Explorer missions
- I&T and MOC system for SWAS, TRACE, WIRE, SMEX Lite Small Explorer missions, SPARTAN/TEXAS
- Distributed software architecture
- Database driven
- Low per-seat cost
- Accepts telemetry at >4 megabits/second
- Extracts and monitors data at >64 kilobits/second
- Archives and plays back telemetry data
- Displays data via traditional display pages, strip charts, plots, and via Java applets over the world wide web
- Outputs data to external applications
- Outputs commands in a variety of encapsulations

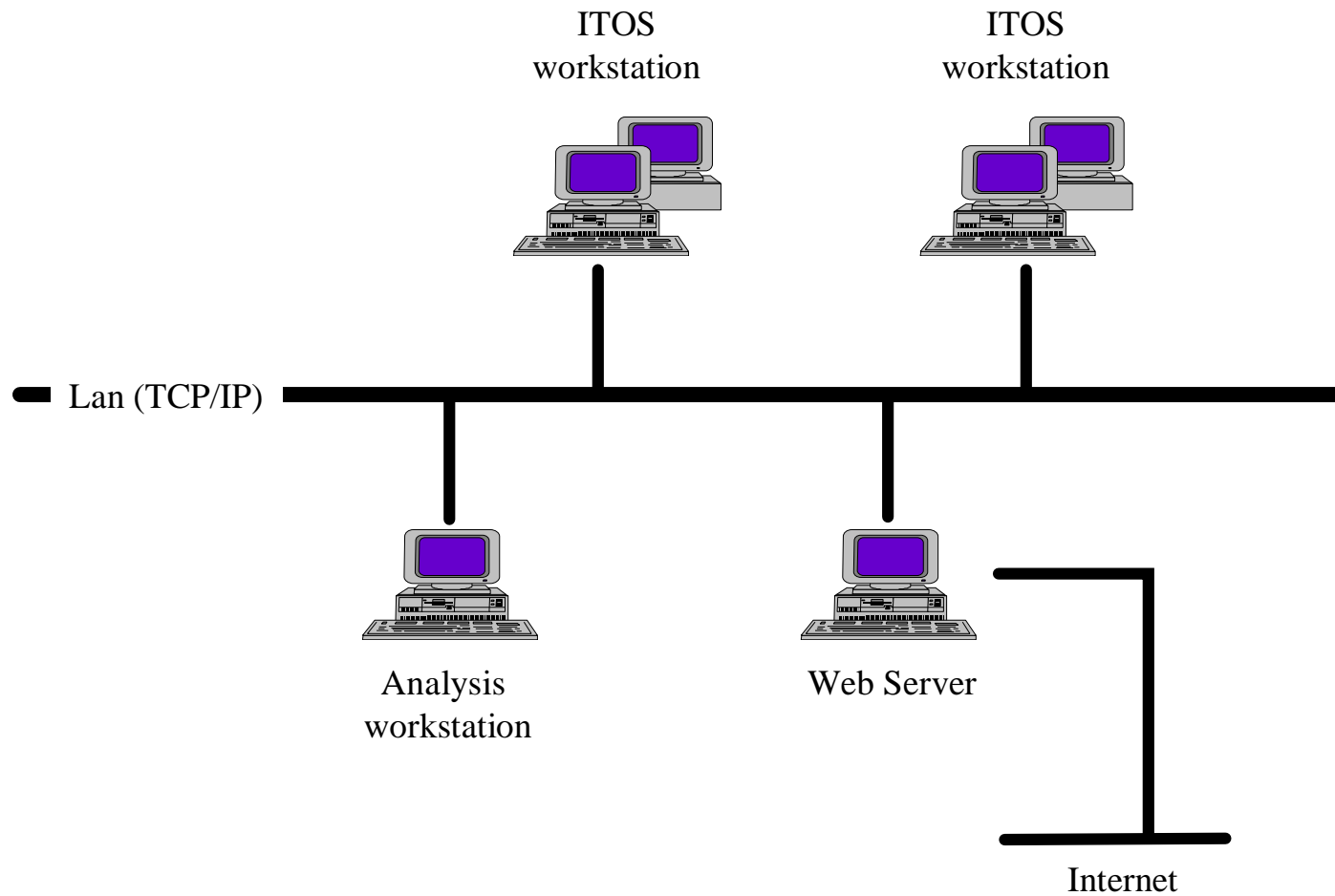


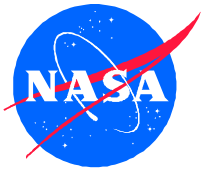
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November 4-5, 1998

Control Center OCC Hardware Configuration





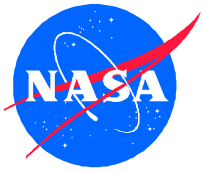
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Control
Center

Control Center

Remote Operations Control Center (ROCC)

- Requirements Traceability
 - “A portable computer-based data handling and processing system shall be provided to support integration, test, pre-launch checkout, launch, early float, and early float contingency terminate operations.”
 - Design-To Requirements Document Section 4.4
- Trade Studies
 - ~~Modified LDB~~
 - ~~In house development~~
 - COTS
 - GOTS



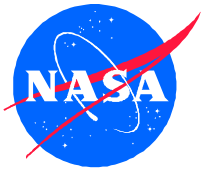
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**4.4
Control
Center**

Control Center

Remote Operations Control Center (ROCC)

- Functional and Performance Requirements
 - Fixed data handling and processing system
 - Support launch, early, float and terminate operations
 - Telemetry Acquisition
 - Command
 - Data Management
 - Real-Time Monitor and Control
 - Data Analysis
- Verification Matrix
 - Demonstration, inspection, analysis



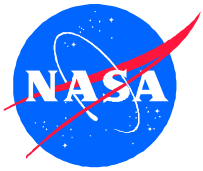
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4.4
Control
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Control Center

Remote Operations Control Center (ROCC)

- Description
 - 3 ITOS Workstations: Operations, Engineering, Backup
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 - Analysis Workstation
 - Data Server (Analysis Workstation backup)
- Risk Assessment & Mitigation/Reliability
 - ITOS currently supports an array of satellite operations
 - GOTS product minimizes cost

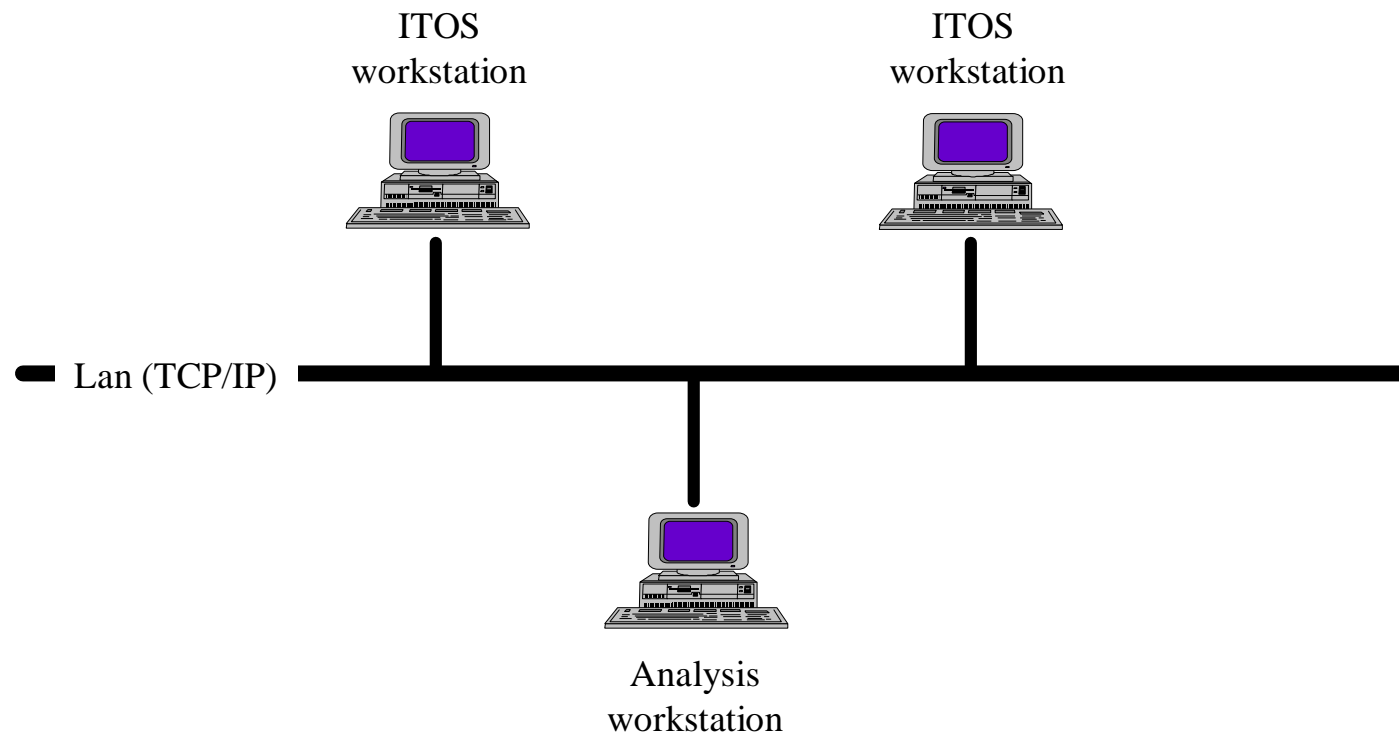


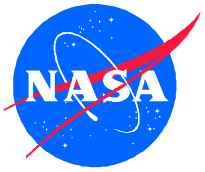
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Control Center ROCC Hardware Configuration





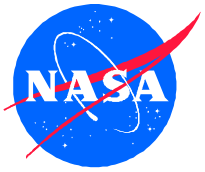
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Remote Monitor & Control System (RMCS)

- Requirements Traceability
 - Design-To Requirements Document Section 4.4
- Trade Studies
 - In-house development
 - COTS
 - GOTS
- Functional and Performance Requirements
 - Fixed data handling and processing system
 - Support remote monitoring and limited controlling of ULDB
 - Telemetry Monitoring
 - Command Forwarding

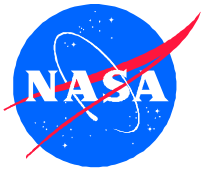


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Control Center Remote Monitor & Control System (RMCS)

- Verification Matrix
 - Demonstration, inspection, analysis
- Description
 - To be developed as enhancement to ITOS
 - Internet browser application
- Risk Assessment & Mitigation/Reliability
 - ITOS currently supports an array of satellite operations
 - GOTS product minimizes cost



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Necessary ITOS Modifications

ITOS must develop the capability to ...

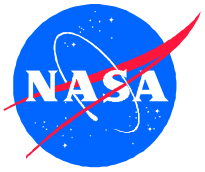
... accept commands from remote users.

... allow multiple, independent users to issue commands simultaneously.

... ingest and process data from several data streams.

... format commands that adhere to the format defined by the flight software specifications.

... compare successive raw parameter values with predefined delta values.



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*Control Center
For more information...*

<http://www.wff.nasa.gov/~code584/ULDBControlCenter/uldbcontrolcenter.html>

Pamela Pittman
Code 588
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